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SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE.

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FRIDAY, JANUARY 24, 1902.

THE AMERICAN ASSOCIATION FOR THE
ADVANCEMENT OF SCIENCE.

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THE winter meeting of Section H was held in the lecture hall of Field Columbian Museum, Chicago, on December 31, 1901, and January 1-2, 1902; Dr. J. Walter Fewkes, of the U. S. National Museum, presiding.

At the opening session, Dr. Geo. A. Dorsey was chosen press secretary. Professor Franz Boas was appointed to represent the Section on a committee to revise the schedule for measurements used in gymnasia. This committee, made up of members of various societies interested in physical education, is to report at the next meeting of the American Association for the Advancement of Physical Education.

A committee to confer with delegates from the Anthropological Society of Washington, D. C., and the American Ethnological Society, with special reference to increasing the usefulness of the *American Anthropologist*, as well as facilities for anthropological publication in general, was chosen as follows: Dorsey (chairman), Starr, Culin, Dixon, MacCurdy, Russell.

At the winter meeting in Baltimore one year ago a committee, consisting of F. W. Putnam (chairman), J. W. Powell and Geo. A. Dorsey, was appointed to 'take preliminary steps for the reception of the

International Congress of Americanists' on the occasion of its first meeting in the United States. The committee reported that it had performed the duty assigned, and respectfully requested to be discharged. The Section voted to discharge the Committee and to extend grateful appreciation for its labors. According to the circular accompanying Chairman Putnam's report, the thirteenth session of the International Congress of Americanists will be held in the halls of the American Museum of Natural History, in the City of New York, beginning at noon on Monday the 20th, and continuing until Saturday, the 25th of October, 1902.

The titles of papers presented before the Section are accompanied by brief abstracts in so far as these have been secured from the authors.

The Beginnings of Anthropology: W J MCGEE.

Discussion: Boas, Russell, Fewkes.

Twenty Years of Section H, Anthropology: GEORGE GRANT MACCURDY.

An analysis of the work done by the Section since its organization, and a comparison of the same with that done by European societies of a similar nature. The conclusion reached is that, while American anthropologists have been working in relatively greater isolation than have European anthropologists, they are now at the threshold of a new epoch destined to be marked by vast progress in correlative and synthetic anthropology. This paper will be printed in SCIENCE.

Discussion: Newell, McGee, Starr, Peet, MacCurdy, Russell, Dorsey, Hartzell, Thompson, Boas.

The Exhibit of Hopi Ceremonies in the Field Columbian Museum: GEO. A. DORSEY.

Dr. Dorsey kindly consented to supplement his paper by an explanatory talk in

the exhibition rooms on the closing day of the session. The following Hopi ceremonies as they occur at Oraibi have been reproduced on a magnificent scale for the Museum by Mr. Voth: Oöqol, Marau and Soyal Altars; Powalawu Sand Mosaic; Powamu Altar and Sand Mosaic; Kateina Initiation and Sand Mosaic; Masililantu Altar; Cho Altar and Sand Mosaic; Teob Altar and Sand Mosaic; Balulukon Screen; Hemis Kateina Dancers; Aña Kateina Dancers. The Museum also possesses a large collection of Hopi dolls, masks and head dresses.

Discussion: Fewkes, McGee.

Some Painted Stone Slabs from the Graves of the Ruins of Walpi: CHAS. L. OWEN.

Mr. Owen's paper was descriptive, his hearers having also the satisfaction of seeing the objects described. The stone slabs were only recently installed.

Basketry Designs in Northern California: ROLAND B. DIXON.

The California Indians were confined almost exclusively to basketry for the expression of their artistic sense, and to this concentration of effort is due, in part at least, the perfection to which the art of basket-making was carried. There are several more or less clearly marked areas, each of which has its own type of basketry and basketry designs. In northern California alone there are three such type areas: (1) Northwestern (Hupa, Karok, Yurok, of Powers with perhaps the Shasta). (2) Northeastern (Klamath, Modoc, Pit River, Yana, Wintu and Maidu). (3) Pomo and perhaps neighboring stocks. In his paper the author refers only to the second and third areas. Often two or more stocks show the same designs but slightly differing one from another. As a whole, however, it appears that each stock is in possession of a body of designs peculiar to itself. The author also had something to say on

the questions of origin of designs and their transmission from tribe to tribe.

Discussion: Peet, McGee, Dixon, Boas, Dorsey and Hudson who gave reasons for favoring *Poma* as against *Pomo* for the name of one of the stocks in question.

Pueblo Indian Settlements near El Paso, Texas: J. WALTER FEWKES.

A study of the social organization, officers, dances, social and other customs, and linguistics of the Tiwan Indians of Ysleta; the Piros Indians of Senecu and Socorro; the Mansos and Sumas.

Discussion: Dorsey, Starr, Kinner, Fewkes.

Variability of Anthropometric Types: FRANZ BOAS.

The variability of organisms depends upon the correlation of their elements. The variability of the whole organism may, therefore, be considered largely an expression of correlation of its constituent parts. The greater the correlation of the parts constituting an organ, or included in a measurement, the greater will be its variability. Generally it is assumed that indices are expressions of correlation. The author demonstrated that they are not necessarily so, but that regression is the only sure test of correlation. The importance of the pathological method of studying correlation is emphasized. Professor Boas made free use of the blackboard as a means of illustration.

The Somatological Investigations of the Hyde Expedition: ALES HRDLICKA.

The Hyde Expedition comprises a variety of anthropological investigations on the peoples of the southwest, the whole being carried on under the direction of Professor Frederick W. Putnam for the American Museum of Natural History, New York City. The object of the somatological work of the Hyde Expedition, of which Dr. Hrdlicka is in charge, is to carry out a sys-

tematic investigation, mainly of a physical nature, on the extinct and living peoples of that part of the United States and Mexico which had once been occupied by the Pueblos with Cliff-Dwellers, and the Toltecs, Chichimecs and Aztecs. It is hoped that these studies will establish the physical types of these peoples and show their racial relations or diversities. The region over which this research extends is bounded approximately by the 38th parallel in the north, by the Rio Grande and the foothills of the Sierra Madre in the east, the Colorado River and Pacific Ocean in the west, and the States of Mexico and Michoacan in the south. It interlaces in the south with the region, the tribes of which were examined by Professor Starr and, in the north and northwest, connects with the field of work of the Jesup Expedition under Professor Boas. Dr. Hrdlicka began the outlined investigations in 1896, on the osteological material, principally Tarasco, collected by Dr. Lumholtz. In 1898 the field work was begun by the study of the tribes of Tarahumaras, Huichols and Tepecanos in Mexico. On the second expedition, in 1899, the research was carried on among the Utes and the Navahos, and on the third trip, in 1900, the investigation comprised the Mokis, Zuñis, Rio Grande Pueblos, all the divisions of the Apaches, Mohaves and a branch of the Piutes. At this moment Dr. Hrdlicka is starting on the fourth expedition, on which probably the field work will be completed. There will be visited the Suppais and Hualapais, Yumas, Pimas, Papagos, Yaquis, Tepehuanas, Coras, Aztecs, Tarascos and several smaller tribes. The work of the expedition will probably occupy the larger part of the coming year. The expenses of this as well as those of the 1900 and 1899 expeditions are generously provided for by Mr. Frederick E. Hyde, Jr., of New York city.

Some Observations concerning the Navaho Blanket Industry: FRANK RUSSELL.

The lantern slides not arriving in time, Dr. Russell did not read his paper. He, however, very kindly authorizes the secretary to make use of the abstract. Some tendencies in the progress of the Navaho blanket industry are described. The most noticeable changes are in the kind of yarn, the quality of the work and in the designs. Styles vary in different localities so that a little experience will enable one to name the district from which a given specimen comes. Methods of cheating the trader are described and an account given of the imitation Navaho blankets now offered for sale. The author tells how to identify imitations.

The Beginnings of Lithoculture: W J McGEE.

Discussion: Fewkes, Thompson, Grimes, McGee, Hudson.

Certain Forms of 'Winged-perforated' Slate Objects: WARREN K. MOOREHEAD.

Mr. Moorehead's paper was fully illustrated by means of numerous originals and drawings. He called attention to the necessity of an archeological nomenclature for the various 'unknown forms' in slate and granite which have hitherto been called 'ceremonials'—a meaningless term in the opinion of the author. The paper is purely descriptive, dealing with form, type, distribution, etc.

Discussion: Culin, Moorehead.

A Voice Tonometer: CARL E. SEASHORE.

An exact and ready method of determining the pitch of tones in singing is described. The apparatus is a modified form of that described by Scripture, *Yale Studies in Psychology*, IV., 135. It works on the principle of the stroboscope and furnishes a direct reading of the vibration

frequency of any tone sung within the range of two octaves. The reading is accurate to the twenty-fifth of a tone. Illustrations of results are given from measurements on the manner and the accuracy of striking a tone, singing the scale, singing the chromatic scale, singing an air, the singing of two notes in unison or in parts, and the singing of the least producible difference in pitch. The last named measurement is the most important because it furnishes a unit for the study of motor processes in singing and speaking.

The Psychological Elements of Visual Space Orientation about a Horizontal Axis: ROBERT MACDOUGALL.

The paper is a summary statement of the results of experimental work carried on in the Harvard Psychological Laboratory during 1900–1901. Its problem is the determination of factors—and their values—of resident and transient sensation which enters into the location, by the human subject, of points in the horizontal plane of the eyes. The experimental variations involved comprise the characteristics of visual determination in an ordinary illuminated field, of the location of a luminous point in an otherwise dark field, and of orientation in complete darkness, in the case of both binocular and monocular vision. The points of greater importance here are the characteristic positive or negative errors of displacement in the subjective plane of the horizon, and the range of the normal mean variation; the influence of the cooperation and disjunction of the two eyes in the act of vision; and the general function of eye strain in such forms of space orientation. Special conditions of body strain are taken up, and an analysis made of the typical errors introduced into the process of space orientation by interferences with the normal body-relations. Of these artificially induced conditions the

chief are the rotation of the eyes about their horizontal axis, the rotation of the head about its lateral horizontal axis, and the rotation of the whole body about a similar axis. A consideration of the influence exerted by the general distribution of intensities in the visual field, and of object planes and lines of perspective upon the subjective location of points in the horizontal plane of the eyes. The paper concludes with an examination of the phenomena of coordination between eye and hand in determining the plane of the eye's horizon by the index finger, the significance of this series of determinations lying in the characteristic displacement of the located point due to changes in the fundamental axes of the head and eyes. Dr. MacDougall's paper will be printed in the Publications of Harvard Psychological Laboratory, Vol. I.

The Sherman Anthropological Collection of Holyoke, Massachusetts: GEORGE GRANT MACCURDY.

Mr. Gardner M. Sherman, of Springfield, Mass., an indefatigable collector for twenty-five years, has supplemented his own finds by exchanges and judicious purchases until the collection which bears his name now numbers from 12,000 to 16,000 specimens. The material is confined almost wholly to American archeology, representing geographically twenty-one States and Territories. Massachusetts, Georgia, Illinois and Tennessee are the largest contributors. The Connecticut River valley is particularly well represented. The collection was purchased last July by the Holyoke Scientific Society, and is to be installed in the new Public Library building. It is at present in the care of Mr. J. T. Draper, head of the science department of the Holyoke High School. This paper will be published in the *American Anthropologist*.

Filial Piety in China: PAUL CARUS.

A study of a pair of wall pendants, ornamental mottoes designed as decorations for the sitting-rooms of the Celestials. The paper and art work are crude enough to allow the assumption that the prints must be very cheap in China, and are designed not for the rich, but for the common people. They may cost in Peking or Hong Kong not more than one or two cents apiece. Evidently they serve two purposes: First, of ornament, and, secondly, of instruction. The Chinese are a moralizing people, even more so than we: while we dislike abstract moralizing, they delight in it and do not tire of impressing upon their children the praiseworthiness of filial devotion. Filial devotion is in Chinese *hsiao*; the character consists of two symbols showing a child supporting an old man, and filial piety is supposed to be the basis of all virtue. The moral relations are regarded as mere varieties of *hsiao*; and the original significance of the word, which means chiefly the devotional attitude of a child toward his parents, includes such relations as the obedience of the subject to his ruler, of the wife to her husband, of the younger brother to his elder brother, and of any one's relations to his superiors, including especially man's relation to God. The Chinese ornament their rooms, not as we do with pictures of beauty, but with moral sayings; and the two pendants described, which unfortunately cannot be reproduced here for lack of space, are typical of the national character of the Chinese.

The Significance of the Cross: PAUL CARUS.

Symbols pass through three stages, the magic, the emblematic and the ornamental. The Christian cross is unique in its conception. Prehistoric crosses are the same in form, but different in interpretation. The difference in meaning is important. For

the sake of distinguishing between the two, let us call the figure of intersecting lines a thwart, and reserve the word cross for its original significance, viz., a martyr instrument. The old cross, the Roman martyr instrument for capital punishment by exposure to the inclemency of the weather, Latin *crux*, Greek *staurus*, had sometimes the form of an irregular thwart, but not necessarily so. Whether or not Christ's cross was a thwart is doubtful; it is possible, however, since he is reported to have borne his cross, which obviously means the *patibulum*. Christianity adopted the thwart as the form of Christ's cross because the thwart was an old religious symbol of deep significance. Thwarts were used in all countries—Egypt, Assyria, India, among the Teutons, the Indians, etc. Their significance varies, and is frequently obliterated. By promiscuously calling all thwarts crosses, we are surprised at finding the Christian symbol universally adopted by pre-Christian religions. The fact is the reverse. Thwarts were used in different meanings by almost all the nations of the world, and then the thwart was identified with the cross to such an extent that, at present, cross has come to mean any figure of intersecting lines. How misleading this identification may be we can see in the Dakota story of the Susbeca, which is a thwart and like the Latin cross in shape, but which means dragon-fly. A missionary mistook the word in the Christian sense, so he gloried in his sermons with St. Paul in the susbeca of Christ. Translations of the New Testament and the Creed in the Dakota language, according to which Christ was crucified on a dragon-fly, are still extant. To the Dakotas the susbeca is a sacred religious symbol, and the missionary's mistake may have helped to recommend to them the Christian faith; but undoubtedly the confusion served to render more mysterious to them

the mystery of the cross. The two papers by Dr. Carus were both fully illustrated, and will be published in *The Open Court*.

On Wednesday and Thursday mornings, the Section met with the American Folk-Lore Society, which, like Section H, is one of the Societies affiliated with the American Society of Naturalists.

GEORGE GRANT MACCUDRY,
Secretary.

THE AMERICAN CHEMICAL SOCIETY.

THE annual winter meeting of the American Chemical Society, the twenty-fifth general meeting of the Society, was held in Philadelphia on the thirtieth and thirty-first of December, the assembly place being the University of Pennsylvania. The opening session was in Houston Hall at half past nine on Monday morning, when the usual felicitous words of welcome on behalf of the city, the university and the Philadelphia Section of the Society were spoken and duly responded to. The reports of the officers of the Society were read, those of the secretary and treasurer being particularly gratifying, showing large increase in membership and a considerable balance in the treasury. Including the members elected at the present meeting, the membership of the Society has passed the two thousand mark; with a very few exceptions, all the prominent chemists of the country are enrolled, and no inconsiderable number of foreigners as well. The value of the *Journal* of the Society is being more and more appreciated. Thirteen Sections of the Society are already established, and a fourteenth is now being formed on the Pacific slope.

Owing to the fact that most of the business is transacted through the Council, little came before the general meeting, but a resolution was passed memorializing the United States Government to pass a law making compulsory the use of the metric